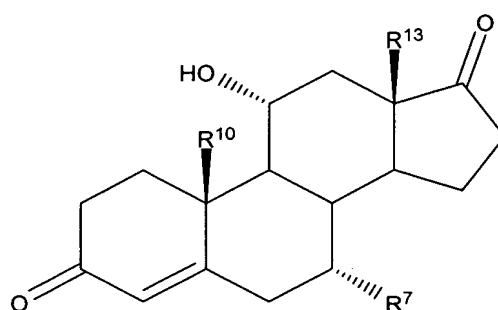


This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:** Please amend the claims as follows:

We claim:

**Claim 1. (Currently Amended)** ~~Microbiological~~ A microbiological process for the production of a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroids ~~with general~~ of formula **4,B**[:]

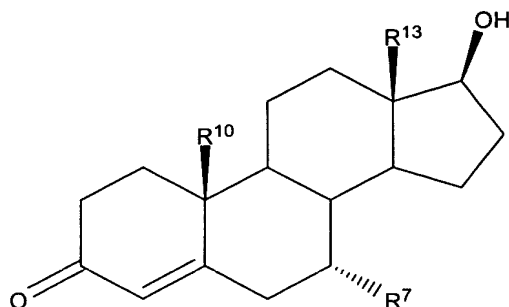


**4,B**

~~in which~~ wherein

- R<sup>7</sup>** ~~is the grouping P-Q, whereby~~ wherein  
P ~~represents~~ is a C<sub>1</sub>- to C<sub>4</sub>-alkylene, and Q ~~represents~~ is hydrogen, a C<sub>1</sub>- to C<sub>4</sub>-alkyl- or C<sub>1</sub>- to C<sub>4</sub>-fluoroalkyl, and ~~the grouping~~ wherein  
P-Q is bonded via P to the steroid skeleton,  
**R<sup>10</sup>** ~~can be~~ is either in  $\alpha$ - or  $\beta$ -position and ~~stands for~~ is H, CH<sub>3</sub> or CF<sub>3</sub>, and  
**R<sup>13</sup>** is methyl or ethyl,

comprising hydroxylating and oxidizing of in which a 7 $\alpha$ -substituted steroid of with general formula **3,A**,

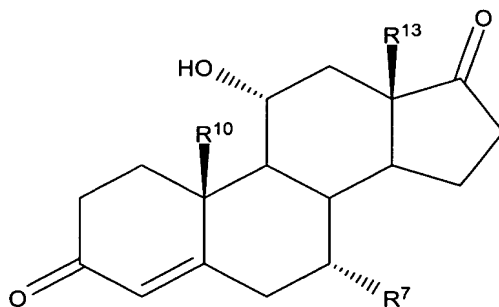


**3,A**

~~in which wherein~~  $R^7$ ,  $R^{10}$  and  $R^{13}$  ~~have the same meanings are~~ as indicated above, is ~~hydroxylated and oxidized with use of a microorganism that which~~ is selected from the group that comprises *Aspergillus sp.*, *Beauveria sp.*, *Glomerella sp.*, *Gnomonia sp.*, *Haplosporella sp.* ~~and or~~ *Rhizopus sp.*

**Claim 2. (Currently Amended)** Process A process according to claim 1, characterized in that wherein the microorganism is selected from the group that comprises *Aspergillus awamori*, *Aspergillus fischeri*, *Aspergillus malignus*, *Aspergillus niger*, *Beauveria bassiana*, *Glomerella cingulata*, *Gnomonia cingulata*, *Haplosporella hesperedica* ~~and or~~ *Rhizopus stolonifer*.

**Claim 3. (Currently Amended)** Microbiological A microbiological process for the production of 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroids ~~with general~~ of formula **4,B**[:]



**4,B**

in which wherein

$R^7$  is the grouping P-Q, whereby wherein

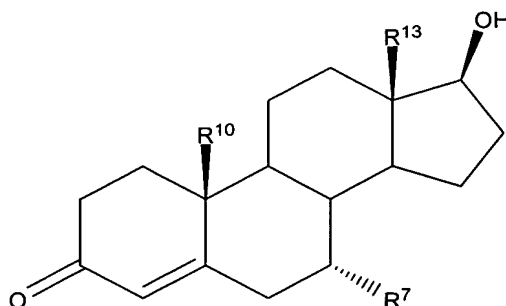
P represents is a C<sub>1</sub>- to C<sub>4</sub>-alkylene and Q represents is hydrogen, a C<sub>1</sub>- to C<sub>4</sub>-alkyl- or C<sub>1</sub>- to C<sub>4</sub>-fluoroalkyl, and the grouping wherein P-Q is bonded via P to the steroid skeleton,

$R^{10}$  can be is either in  $\alpha$ - or  $\beta$ -position and stands for is H, CH<sub>3</sub> or CF<sub>3</sub>, and

$R^{13}$  is methyl or ethyl,

in which

comprising hydroxylating of a 7 $\alpha$ -substituted steroid with general of formula 3,A in 11 $\alpha$ -position, [:]



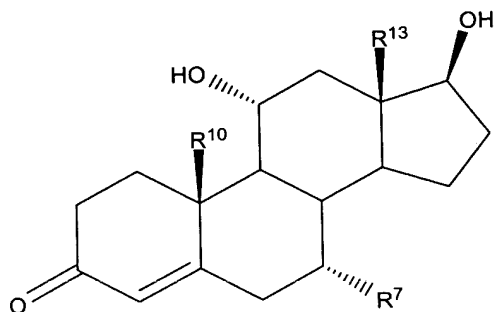
3,A

in which wherein  $R^7$ ,  $R^{10}$  and  $R^{13}$  have the same meanings are as previously indicated,

is hydroxylated in 11 $\alpha$ -position in a first microbiological process step

with use of using a first microorganism that which is selected from the group that comprises *Aspergillus sp.*, *Beauveria sp.*, *Gibberella sp.*, *Glomerella sp.*, *Gnomonia sp.*, *Metarrhizium sp.*, *Nigrospora sp.*, *Rhizopus sp.* and or *Verticillium sp.*,

with the formation of to form a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroid with general of formula C:



**C**

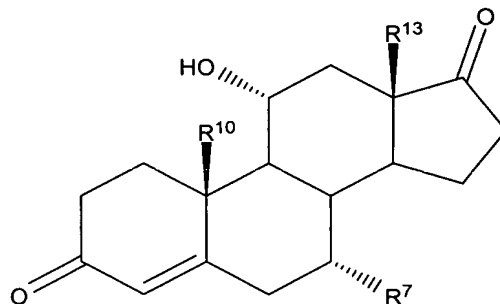
~~in which wherein~~  $R^7$ ,  $R^{10}$  and  $R^{13}$  ~~have the same meanings~~ are as indicated above,  
and  
oxidizing the 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroid with general product of formula **C** that is  
~~produced is then oxidized with use of a second microorganism that~~ which is selected from  
~~the group that comprises~~ *Bacillus* sp., *Mycobacterium* sp., *Nocardia* sp. and or  
*Pseudomonas* sp., ~~with the formation of the 7 $\alpha$ -substituted steroid with general formula~~  
**4,B.**

**Claim 4. (Currently Amended)** ~~Process~~ A process according to claim 3, wherein  
the first microorganism is ~~selected from the group that comprises~~ *Aspergillus* *malignus*,  
*Aspergillus* *melleus*, *Aspergillus* *niger*, *Aspergillus* *ochraceus*, *Beauveria* *bassiana*,  
*Gibberella* *fujikuroi*, *Gibberella* *zeae*, *Glomerella* *cingulata*, *Glomerella* *fusaroides*,  
*Gnomonia* *cingulata*, *Metarrhizium* *anisopliae*, *Nigrospora* *sphaerica*, *Rhizopus* *oryzae*,  
*Rhizopus* *stolonifer* and or *Verticillium* *dahliae*.

**Claim 5. (Currently Amended)** ~~Process~~ A process according to claim 3, wherein  
the second microorganism is ~~selected from the group that comprises~~ *Bacillus* *lactimorbus*,  
*Bacillus* *sphaericus*, *Mycobacterium* *neoaurum*, *Mycobacterium* *smegmatis*, *Nocardia*  
*corallina*, *Nocardia* *globetula*, *Nocardia* *minima*, *Nocardia* *restrictus*, *Nocardia*  
*rubropertincta*, *Nocardia* *salmonicolor* and or *Pseudomonas* *testosteroni*.

**Claim 6. (Currently Amended)**

**Microbiological** A microbiological process for the production of a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroids with general of formula 4,B[ $\pm$ ]



**4,B**

in which wherein

**R<sup>7</sup>** is the grouping P-Q, whereby wherein

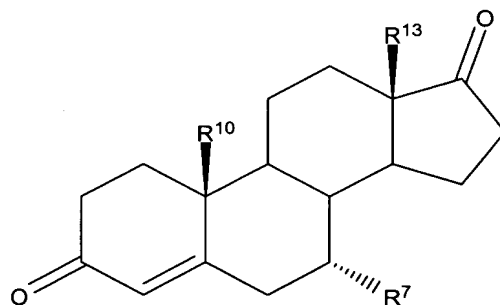
P represents is a C<sub>1</sub>- to C<sub>4</sub>-alkylene, and Q represents is hydrogen, a C<sub>1</sub>- to C<sub>4</sub>-alkyl- or C<sub>1</sub>- to C<sub>4</sub>-fluoroalkyl, and the grouping wherein  
P-Q is bonded via P to the steroid skeleton,

**R<sup>10</sup>** can be is either in  $\alpha$ - or  $\beta$ -position and stands for is H, CH<sub>3</sub> or CF<sub>3</sub>,

and

**R<sup>13</sup>** is methyl or ethyl,

comprising hydroxylating in which 7 $\alpha$ -substituted steroids with general of formula D:



**D**

in which wherein  $R^7$ ,  $R^{10}$  and  $R^{13}$  ~~have the same meanings are~~ as indicated above, are hydroxylated with use of using a microorganism that which is selected from the group that comprises *Aspergillus* sp., *Beauveria* sp., *Curvularia* sp., *Gibberella* sp., *Glomerella* sp., *Gnomonia* sp., *Haplosporella* sp., *Helicostylum* sp., *Nigrospora* sp., *Rhizopus* sp. and or *Syncephalastrum* sp.

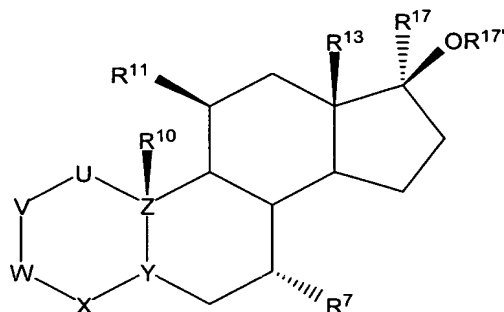
**Claim 7. (Currently Amended)**      ~~Process~~ A process according to claim 6, wherein the microorganism is ~~selected from the group that comprises~~ *Aspergillus alliaceus*, *Aspergillus awamori*, *Aspergillus fischeri*, *Aspergillus malignus*, *Aspergillus melleus*, *Aspergillus nidulans*, *Aspergillus niger*, *Aspergillus ochraceus*, *Aspergillus variegator*, *Beauveria bassiana*, *Curvularia lunata*, *Gibberella zeae*, *Glomerella cingulata*, *Glomerella fusaroides*, *Gnomonia cingulata*, *Haplosporella hesperedica*, *Helicostylum piriformae*, *Nigrospora sphaerica*, *Rhizopus oryzae* and or *Syncephalastrum racemosum*.

**Claim 8. (Currently Amended)**      Microbiological      A microbiological process according to claim 1, wherein  $R^7$  stands for  $CH_3$ .

**Claim 9. (Currently Amended)**      Microbiological      A microbiological process according to claim 1, wherein  $R^{10}$  stands for H.

**Claim 10. (Currently Amended)**      Microbiological      A microbiological process according to claim 1, wherein  $R^{13}$  stands for  $CH_3$ .

**Claim 11. (Withdrawn, Currently Amended)** A 7 $\alpha$ ,17 $\alpha$ -Substituted substituted 11 $\beta$ -halogen steroids with general of formulas **8**, **10**, and or **12**:



8,10,12

in-which wherein

U-V-W-X-Y-Z ~~stands for one of~~ is a ring structures  $C^1-C^2-C^3-C^4=C^5-C^{10}$ ,  $C^1-C^2-C^3-C^4-C^5=C^{10}$  or  $C^1-C^2-C^3-C^4-C^5-C^{10}$ , ~~whereby in this case,~~ wherein an oxo group (=O) is bonded to W (=C<sup>3</sup>),

or a ring structure  $C^1=C^2-C^3=C^4-C^5=C^6$ , ~~whereby in this case~~ wherein a radical OR<sup>3</sup> is bonded to W (=C<sup>3</sup>),

**R<sup>3</sup>** ~~stands for~~ is H, C<sub>1</sub>- to C<sub>4</sub>-alkyl, C<sub>1</sub>- to C<sub>4</sub>-alkanoyl or a cyclic C<sub>3</sub>- to C<sub>7</sub>-ether with the O-atom of the OR<sup>3</sup>-radical,

**R<sup>7</sup>** ~~is the grouping~~ P-Q, whereby wherein

P represents is a C<sub>1</sub>- to C<sub>4</sub>-alkylene, and Q represents is hydrogen, a C<sub>1</sub>- to C<sub>4</sub>-alkyl- or C<sub>1</sub>- to C<sub>4</sub>-fluoroalkyl, and ~~the grouping~~ wherein P-Q is bonded via P to the steroid skeleton,

**R<sup>10</sup>** ~~can be~~ is either in α- or β-position and ~~stands for~~ is H, CH<sub>3</sub> or CF<sub>3</sub>, and is present only if X-Y-Z is not  $C^4-C^5=C^{10}$ ,

**R<sup>11</sup>** is a halogen,

**R<sup>13</sup>** is methyl or ethyl,

**R<sup>17</sup>** ~~stands for~~ is H, C<sub>1</sub>- to C<sub>18</sub>-alkyl, alicyclic C<sub>1</sub>- to C<sub>18</sub>-alkyl, C<sub>1</sub>- to C<sub>18</sub>-alkenyl, alicyclic C<sub>1</sub>- to C<sub>18</sub>-alkenyl, C<sub>1</sub>- to C<sub>18</sub>-alkinyl, C<sub>1</sub>- to C<sub>18</sub>-alkylaryl, C<sub>1</sub>- to C<sub>8</sub>-alkylenenitrile or ~~for the grouping~~ P-Q, whereby the grouping wherein P-Q has the above-mentioned meaning,

**R<sup>17'</sup>** ~~stands for~~ is H, C<sub>1</sub>- to C<sub>18</sub>-alkyl, alicyclic C<sub>1</sub>- to C<sub>18</sub>-alkyl, C<sub>1</sub>- to C<sub>18</sub>-alkenyl,

alicyclic C<sub>1</sub>- to C<sub>18</sub>-alkenyl, C<sub>1</sub>- to C<sub>18</sub>-alkinyl or C<sub>1</sub>- to C<sub>18</sub>-alkylaryl, ~~whereby~~  
~~wherein R<sup>17</sup> also can be~~ is optionally bonded via a keto group to the 17β-oxy  
group, ~~and whereby R<sup>17</sup> also in addition can be~~ or optionally substituted with  
one or more groups NR<sup>18</sup>R<sup>19</sup> or one or more groups SO<sub>x</sub>R<sup>20</sup>, ~~whereby~~  
~~wherein~~ x = 0, 1 or 2,

and R<sup>18</sup>, R<sup>19</sup> and R<sup>20</sup> in each case, independently of one another, can have  
the same meaning as R<sup>17</sup>,

~~as well as their pharmaceutically compatible addition salts, esters and amides a~~  
pharmaceutically compatible salt thereof or an ester or amide thereof.

**Claim 12. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein U-V-W-X-Y-Z ~~stands for~~ is a ring structure  
C<sup>1</sup>-C<sup>2</sup>-C<sup>3</sup>-C<sup>4</sup>=C<sup>5</sup>-C<sup>10</sup> or C<sup>1</sup>-C<sup>2</sup>-C<sup>3</sup>-C<sup>4</sup>-C<sup>5</sup>=C<sup>10</sup> or C<sup>1</sup>=C<sup>2</sup>-C<sup>3</sup>=C<sup>4</sup>-C<sup>5</sup>=C<sup>10</sup>.

**Claim 13. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein R<sup>1</sup> ~~stands for~~ is H.

**Claim 14. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein R<sup>7</sup> ~~stands for~~ is CH<sub>3</sub>.

**Claim 15. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein R<sup>11</sup> ~~stands for~~ is fluorine.

**Claim 16. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein R<sup>13</sup> ~~stands for~~ is CH<sub>3</sub>.

**Claim 17. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-  
halogen steroids according to claim 11, wherein R<sup>17</sup> ~~stands for~~ is H, CH<sub>3</sub>, C<sub>1</sub>- to C<sub>18</sub>-alkinyl,  
CH<sub>2</sub>CN or CF<sub>3</sub>.

**Claim 18. (Withdrawn, Currently Amended)** A 7α,17α-Substituted substituted 11β-



halogen steroids according to claim 11, wherein  $R^{17}$  is ethinyl.

**Claim 19. (Withdrawn, Currently Amended)** ~~A~~ 7 $\alpha$ ,17 $\alpha$ -Substituted substituted 11 $\beta$ -halogen steroids according to claim 11, wherein  $R^{17}$  ~~stands for~~ is H.

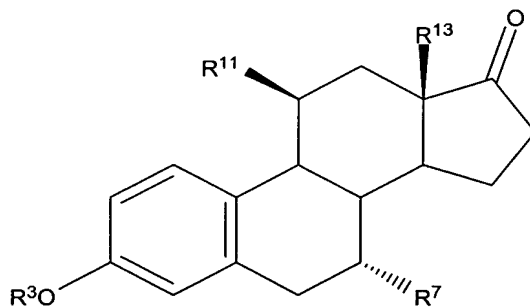
**Claim 20. (Withdrawn, Currently Amended)** ~~A~~ 7 $\alpha$ ,17 $\alpha$ -Substituted substituted 11 $\beta$ -halogen steroids according to claim 11, ~~namely~~ which is

17 $\alpha$ -Ethinyl-11 $\beta$ -fluoro-17 $\beta$ -hydroxy-7 $\alpha$ -methylestr-4-en-3-one,

17 $\alpha$ -Ethinyl-11 $\beta$ -fluoro-17 $\beta$ -hydroxy-7 $\alpha$ -methylestr-5(10)-en-3-one or

17 $\alpha$ -Ethinyl-11 $\beta$ -fluoro-7 $\alpha$ -methylestra-1,3,5(10)-triene-3,17 $\beta$ -diol.

**Claim 21. (Withdrawn, Currently Amended)** ~~A~~ 7 $\alpha$ ,17 $\alpha$ -Substituted substituted 11 $\beta$ -haloestra-1,3,5(10)-trienes with general of formula 6:



6

~~in which~~ wherein

$R^3$  ~~stands for~~ is H, C<sub>1</sub>- to C<sub>4</sub>-alkyl, C<sub>1</sub>- to C<sub>4</sub>-alkanoyl or a cyclic C<sub>3</sub>- to C<sub>7</sub>-ether with the O-atom of the OR<sup>3</sup>-radical,

$R^7$  is the grouping P-Q, whereby wherein

P represents is a C<sub>1</sub>- to C<sub>4</sub>-alkylene, and Q represents is hydrogen, a C<sub>1</sub>- to C<sub>4</sub>-alkyl- or C<sub>1</sub>- to C<sub>4</sub>-fluoroalkyl, and ~~the grouping~~ wherein P-Q is bonded via P to the steroid skeleton,

$R^{11}$  is a halogen;

$R^{13}$  is methyl or ethyl,  
~~as well as their pharmaceutically compatible addition salts, esters and amides a~~  
pharmaceutically compatible salt thereof or an ester or amide thereof.

**Claim 22. (Withdrawn, Currently Amended)** ~~A 7 $\alpha$ ,17 $\alpha$ -Substituted~~ substituted haloestra-1,3,5(10)-trienes according to claim 21, ~~namely~~ which is  
11 $\beta$ -Fluoro-3-hydroxy-7 $\alpha$ -methylestra-1,3,5(10)-trien-17-one.

**Claim 23. (Withdrawn, Currently Amended)** ~~Process~~ A process for the production of a 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroids ~~with general of~~ formula 10 according to according to claim 11, in which U-V-W-X-Y-Z ~~stands for~~ is the ring structure  $C^1-C^2-C^3-C^4=C^5-C^{10}$ , ~~with the following process comprising the steps of:~~

- Nucleophilic substitution in a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroid ~~with general of~~ formula 4,B in 11-position with a halodehydroxylating reagent;
- Reaction of the 7 $\alpha$ -substituted 11 $\beta$ -halogen steroid that is produced ~~in this case~~ with an alkylating agent in a selective manner on the  $C^{17}$  atom of the ring skeleton to form the 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroid ~~with general of~~ formula 10.

**Claim 24. (Withdrawn, Currently Amended)** ~~Process~~ A process for the production a 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroids ~~with general of~~ formula 12 according to according to claim 11, in which U-V-W-X-Y-Z ~~stands for~~ is the ring structure  $C^1-C^2-C^3-C^4-C^5=C^{10}$ , ~~with the following process comprising the steps of:~~

- Nucleophilic substitution in a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroid ~~with general of~~ formula 4,B in 11-position with a halodehydroxylating reagent,
- Reaction of the 7 $\alpha$ -substituted 11 $\beta$ -halogen steroid that is produced ~~in this case~~ with an alkylating agent in a selective manner on the  $C^{17}$  atom of the ring skeleton to form the 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroid ~~with general of~~ formula 10,
- Isomerization of the 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroid ~~with general of~~ formula 10 to form the corresponding isomer ~~with general of~~ formula 12, in which U-V-W-X-Y-Z ~~stands for~~ is the ring structure  $C^1-C^2-C^3-C^4-C^5=C^{10}$ .

**Claim 25. (Withdrawn, Currently Amended)** ~~Process~~ A process for the production a 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroids ~~with general~~ of formula 8 according to according to claim 11, in which U-V-W-X-Y-Z ~~stands for~~ is the ring structure  $C^1=C^2-C^3=C^4-C^5=C^6$  ~~with the following process comprising the steps of:~~

- Nucleophilic substitution in a 7 $\alpha$ -substituted 11 $\alpha$ -hydroxy steroid ~~with general~~ of formula 4,B in 11-position with a halodehydroxylating reagent,
- Oxidizing of the 7 $\alpha$ -substituted 11 $\beta$ -halogen steroid that is produced ~~in this case to~~ form 7 $\alpha$ -substituted estra-1,3,5(10)-triene ~~with general~~ of formula 6 according to ~~one of claims claim~~ 17 and 18;
- Reaction of the 7 $\alpha$ -substituted estra-1,3,5(10)-triene with general formula 6 with an alkylating agent in a selective manner on the C<sup>17</sup> atom of the ring skeleton to form the 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroid with general formula 8.

**Claim 26. (Cancelled)**

**Claim 27. (Withdrawn, Currently Amended)** ~~Pharmaceutical preparations that contain~~ A pharmaceutical preparation containing at least one 7 $\alpha$ ,17 $\alpha$ -substituted 11 $\beta$ -halogen steroid with general formulas 8, 10, and 12 according to claim 11 as well as at least one pharmaceutically compatible vehicle.